National Institute of Environmental Health Sciences

Impact of temperature variability on cholera incidence in southeastern Africa, 1971-2006

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Abstract:

Africa has a number of climate-sensitive diseases. One that remains a threat to public health is cholera. The aquatic environment temperature is the most important ecological parameter governing the survival and growth of Vibrio cholerae. Indeed, recent studies indicate that global warming might create a favorable environment for V. cholerae and increase its incidence in vulnerable areas. In light of this, a Poisson Regression Model has been used to analyze the possible association between the cholera rates in southeastern Africa and the annual variability of air temperature and sea surface temperature (SST) at regional and hemispheric scales, for the period 1971-2006. The results showed a significant exponential increase of cholera rates in humans during the study period. In addition, it was found that the annual mean air temperature and SST at the local scale, as well as anomalies at hemispheric scales, had significant impact on the cholera incidence during the study period. Despite future uncertainty, the climate variability has to be considered in predicting further cholera outbreaks in Africa. This may help to promote better, more efficient preparedness.

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Resource Description

Exposure :

weather or climate related pathway by which climate change affects health

Food/Water Quality, Temperature

Food/Water Quality: Pathogen

Geographic Feature:

resource focuses on specific type of geography

Freshwater, Ocean/Coastal

Geographic Location:

resource focuses on specific location

Non-United States

Non-United States: Africa

African Region/Country: African Country

Other African Country: Uganda;Kenya;Rwanda;Burundi;Tanzania;Malawi;Zambia;Mozambique

Health Impact: ☑

specification of health effect or disease related to climate change exposure

Infectious Disease

Infectious Disease: Foodborne/Waterborne Disease

Foodborne/Waterborne Disease: Cholera

Mitigation/Adaptation: ☑

mitigation or adaptation strategy is a focus of resource

Adaptation

Model/Methodology: ☑

type of model used or methodology development is a focus of resource

Outcome Change Prediction

Population of Concern: A focus of content

Population of Concern: ☑

populations at particular risk or vulnerability to climate change impacts

Low Socioeconomic Status

Resource Type: ☑

format or standard characteristic of resource

Research Article

Timescale: ☑

time period studied

Time Scale Unspecified

Vulnerability/Impact Assessment: ☑

resource focus on process of identifying, quantifying, and prioritizing vulnerabilities in a system

A focus of content